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Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 19 Number 1 **Fall 1999**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600
612-335-2323

6 - 6:30 p.m. — Board meeting, Room B
6:30 - 7 p.m. — Refreshments, information, Room A
7 - 9 p.m. — Program, Society Business
9 - 9:30 p.m. — Socializing
9:30 p.m. — Doors locked

Programs

Oct. 7
"Seed Collecting for Prairie Restoration," Dave Crawford.

Nov. 4
"Recent research with *Botrychium* (grape ferns)," Cindy Johnson-Groh
Seed Exchange

Dec. 2
"Plants and People on Minnesota Cliffs," Mike Farris
Plant-of-the-Month

Feb. 3
"Fire Management and the Native Forest Communities of Itasca State Park," Becky Marty
Plant-of-the-Month

March 2
Speaker, Plant-of-the-Month

April 6
Speaker, Plant-of-the-Month

May 4
Speaker, Plant-of-the-Month

June 1
"Notable Native Gardens of Minnesota," Plant Sale

MNPS Web Site
http://www.stolaf.edu/depts/biology/mnps

Suburban yards attract interest in native plants

by Dave Crawford

My wife and I have finished our fourth year of inviting people to our White Bear Lake yard. Most people have open houses — we have an "open yard" instead. We've had about 200 visits in the four years. The Aug. 22 tour brought in 32 people, many of whom continued on to tour another yard that demonstrates landscaping with Minnesota native plants, Bob and Ann Djupstom's, near Sunrise Junior High.

Our yard looks a bit different from the others on our block. We've been working on the yard for six years. We've seen that the way we used to live, with mowed lawn from fenceline to fenceline, was hard on wildlife and on us, so we decided to change it. We believe that cities don't have to be unhealthy places for wildlife. We like to see songbirds, butterflies, and chipmunks, so we've made them feel welcome in our yard.

The "welcome mat" we've provided is a series of gardens of wildflowers and grasses native to Minnesota. The plants attract hummingbirds, chickadees, goldfinches, house wrens, and other birds which come to eat the nectar, the fruit, the seeds, or the insects that are on the plants. We've seen 17 kinds of butterflies, when most people who live in suburbs are lucky if they see as many as five or six kinds. The gardens also provide cover and food for chipmunks, rabbits, shrews (good animals to have around because they eat insects and mice), and squirrels. We've put out nest boxes, water, and feeders, and they bring in even more birds.

Most people think you have to have acres of land or live next to a natural area to see wildlife, but that's not necessary. All of this is going on in an average suburban lot in the middle of a 1950s-vintage development. That development left a lot more trees than many housing projects today, and that helps, but the real reason for success has been the native plant gardens.

We like to invite people to see what we've done, because we really believe that it's good for the Earth and good for our own happiness, too. Most people don't think of mowed lawns as a lot of labor, but if you add up all the hours of work and gallons of gasoline and pounds of chemicals that go into an average lawn, it's incredible. We'd rather put that effort into something healthier. We both grew up seeing and enjoying caterpillars, butterflies, birds, and squirrels, and we don't want to lose that. Besides, less mowing means less air pollution and noise. We also save water, because our "Minnesota tough" natives don't need much watering to stay healthy.

Continued on page 3

From the President

By Catherine Reed, President, MNPS

Hello, Everyone

Enjoy the Fall: as the vegetation dies or becomes dormant, Minnesotans become energized and have time to plan new projects before becoming lethargic in January. Let's put some of that energy into MNPS. As you may know, our purpose (listed in full below), encompasses not only ourselves but the plants of the state and all people who are involved with these plants.

So let's get started in the following areas. (Specific opportunities are always coming up.)

- Although we are not allowed to lobby, we can provide information on possible consequences of any legislation or management actions to the public and to professionals.
- We can inform teachers and our own neighbors about the value of native plants, either in person or through our website, listserv and brochures.
- We can publicize our meetings so that more people who may be interested will know about them.
- We can enjoy our own projects and share them with others. (For example, I produced and gave away 1,300 oak seedlings this year and met a lot of interesting people in the process. I'll give a presentation on this project to the Minnesota Science Teachers Association. Another valuable way to share information is by sending it to this newsletter.)

Specifically about meetings

To keep meetings from running too late, please bring all announcements in written form. We will post these on a board for everyone to read before or after the meeting. The chair will give a one-sentence summary of each announcement at the start of the meeting. (Also, send your announcements to the newsletter and post them on the listserv to reach more people.) Announcements are constantly an issue: remember that one purpose of our meetings is to put people in touch with opportunities to work on the Society's goals.

I'll end by thanking the army of members who make it possible for the Society to continue its work, both those who plan and facilitate the meetings and arrangements, and those who reach out to other people and groups. Remember, there is no "they" — everything that gets done is done by volunteers. So if you find yourself thinking, "MNPS should do something about this," take some action yourself to get it started.

Minnesota Native Plant Society's purpose

(Abbreviated from the Bylaws)

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1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

The Minnesota Native Plant Society

Minnesota Plant Press

Gerry Drewry, editor

24090 Northfield Blvd., Hampton, MN 55031; 651-460-6755 (W), 651-463-8006 (H, fax)

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The Minnesota Native Plant Society is a tax-exempt 501 (c)(3) organization as determined by the U.S. Internal Revenue Service. Contact the society by e-mail at: mnps@altavista.net. Dues for regular members are $12 per year; for students and seniors, $8; for families, $15; for institutions, $20; and for donors, $25. All dues include a newsletter subscription. Four issues are published each year. Make checks out to: Minnesota Native Plant Society; mail them to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108.

MNPS Board of Directors

President: Catherine Reed, University of Minnesota Department of Entomology, 219 Hodson Hall, 1980 Folwell Ave., St. Paul, MN 55108; 612-644-3765; reedx012@tc.umn.edu

Vice-President: Joel Dunnette, 4526 Co. Rd. 3 S.W., Byron, MN 55920; 507-284-3914 (W); 507-365-8091 (H); dunnette.joel@mayo.edu

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Secretary: Virginia Card, Metropolitan State University, 700 E. 7th St., St. Paul, MN 55106; 612-722-5022; cardx004@tc.umn.edu

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Gerry Drewry, ex-officio (See address above.)

Continued from page 1

Mowed grass is great for barbecues and play areas, but we decided we didn't need to have the whole yard be grass. We started with gardens along fences and around trees, so we'd have less trimming to do after mowing. We added a butterfly garden in a sunny spot, and added shrubs that have berries, like dogwood and elderberry, to bring in more birds.

We use only plants native to Minnesota because we've seen what imported plants can do if they get out of control. Purple loosestrife, spotted knapweed, and dandelions are examples of imported plants that should never have been brought to this continent. Native plants are also the plants that our local wildlife likes best. For instance, to have monarch caterpillars in our yard, we've got to have at least one kind of milkweed — there are 13 kinds found naturally in Minnesota — because monarch caterpillars will starve or be poisoned if they eat anything but milkweed. Many other butterfly species are equally particular, so we've put a good variety of native plants in our yard.

The people who come to our yard take with them an appreciation of how this kind of landscaping can reduce maintenance, reduce waste and chemical runoff, and be attractive to wildlife and people at the same time. The use of native plants in city landscapes is booming, because homeowners, businesses, and city governments can see the benefits. It's hard not to, when planting a few red milkweed plants (the flowers smell like fresh bubble gum) and blazing stars will beautify a yard and bring monarch butterflies back to neighborhoods where people might not have seen a monarch for years.

We invite anyone with an interest in growing native plants to contact us, or to come by and look at our yard. August was a particularly good time, because rough blazing star and meadow blazing star were blooming and attracting monarchs. Call Dave Crawford or Diane Peterson at 653-4385, or visit the yard at 4051 Gisella Blvd. You might also drive by the school prairie at Parkview Elementary, on the east side of the school on Grand Ave. just north of County Road E, east of Bellaire Ave. You'll see even more monarchs there.

We're glad to have so many guests come to our open yards to learn about this kind of landscaping. We're glad that so many teachers have been interested. We think it's important for people to have frequent, first-hand experiences with natural environments. Teachers and parents who create the opportunity for kids to do this will give those kids positive memories that will last them a lifetime.

New members welcomed

The MNPS membership list is included in this issue. Several new members have joined since the list was prepared. They are:

Gloria J. Peterson, 479 Oak St., Taylors Falls, MN 55084; W: 651-213-2465, H: (651)465-4181;

Nancy and Dennis Sansone, 2447 Skyline Dr., Bloomington, MN 55425; H: 612-854-5066;

Michael Sowers and Mary Fink, 7201 York Ave. S., Apt. 705, Edina, MN 55435; H: 612-841-0154; michael_sowers@worldnet.att.net

Project needs volunteers

Knowledgeable volunteers are needed to help oversee a planting for the Greening the Great River Park project that will be done by 300 community volunteers from 8 a.m. to 2 p.m. Saturday, Oct. 9. Lunch and a celebration will follow the planting. To volunteer as a supervisor, call 651-224-9885, and leave a message for Kathy Dougherty. She will return the call.

Plant Lore

by Thor Kommedahl

What is baneberry?

In Minnesota, baneberry comes in two colors, red and white. If it's red it is *Actaea rubra* and if white *A. pachypoda* (or *A. alba*). Red baneberry grows throughout the state, but white baneberry grows mainly along the eastern border. Both are members of the buttercup family.

What do its names mean?

Actaea means elder in Greek. White baneberry is also called doll's eyes because the shiny white fruits resemble the china eyes once used in dolls. Note the purplish dot. Pachypoda refers to its thick pedicels, which are red..

What is the plant like?

Both species are odoriferous perennial herbs. Leaves of both species are divided into several sharply toothed leaflets and form knee to waist-high canopies in shady woods. Creamy white flowers in spring lead to either red or white berries in summer.

Why is it a baneberry?

Bane means poison, and the berries and roots are poisonous. Doll's eyes may cause severe inflammation of the digestive tract and skin blisters, and red baneberry can cause vomiting, and delirium, as well, if eaten. All parts of the plant contain the glycoside protoanemonin, an irritant oil. Deaths from ingestion have not been reported in the United States.

Has it any medicinal uses?

American Indians used root tea to treat menstrual irregularity and for coughs, colds and even constipation. Homeopaths use the roots of white baneberry for arthritis and rheumatism.

New membership year begins

The MNPS membership year is from Oct. 1 to Sept. 30. Dates on the mailing labels show when your membership runs out. A reply envelope for dues is enclosed in this issue. Please use it, or renew at the October meeting. If you do not have the envelope, look on page 2 of this newsletter for the dues categories and MNPS mailing address. Members who have not renewed will receive meeting notice postcards only through December.

Minnesota Native Plant Society
University of Minnesota
220 Biological Sciences Center
St. Paul, MN 55108

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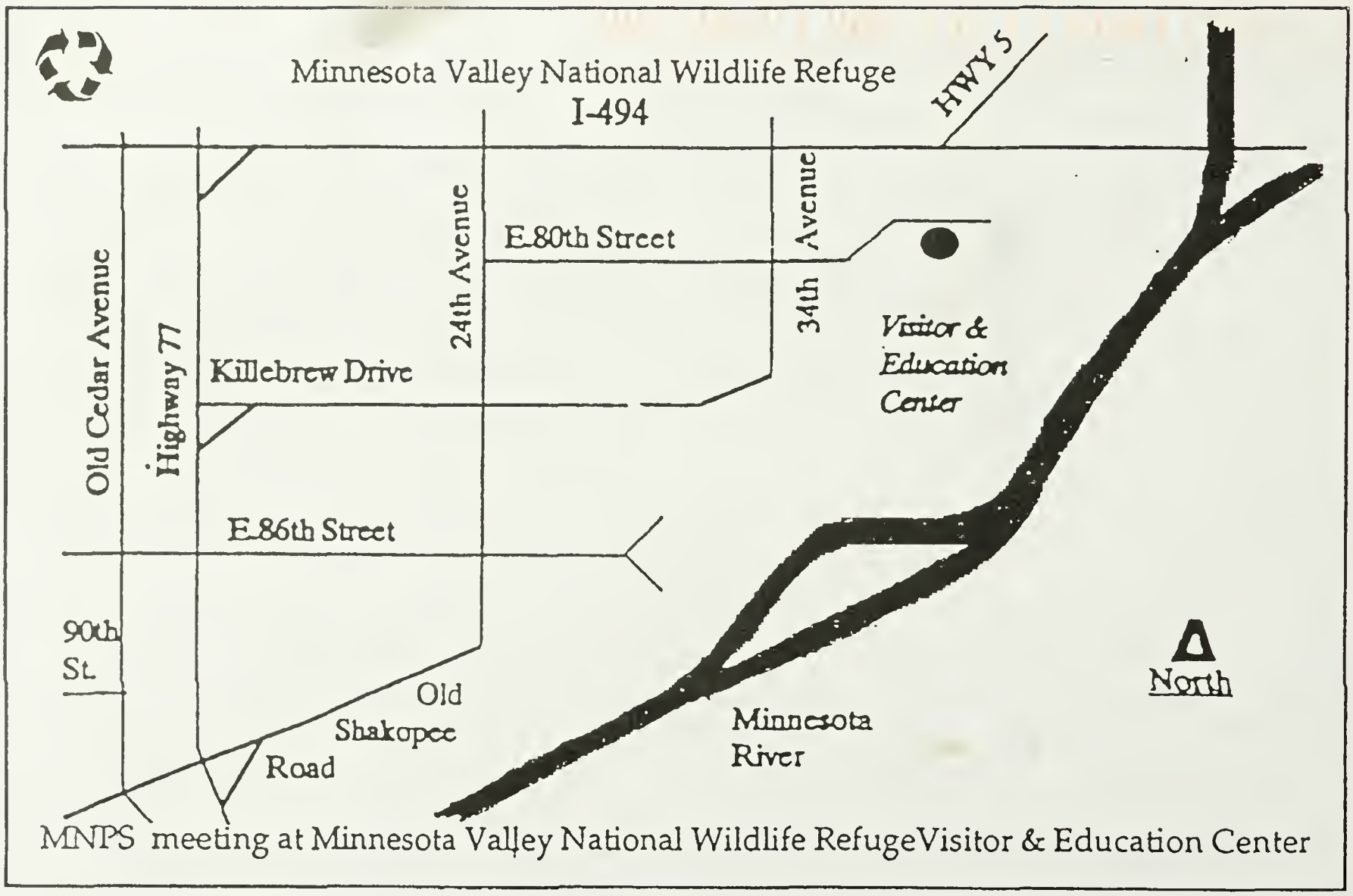

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Feb. 3
"Fire Management and the Native Pine Forests of Itasca State Park," Becky Marty, Itasca State Park
Plant-of-the-Month

March 2
"The History of Hemlock in Minnesota and the Upper Midwest," Randy Calcote, University of Minnesota
Plant-of-the-Month

April 6
"Debunking Common Tree Myths," Kent Honl, Rainbow Tree Care
Plant-of-the-Month

May 4
"Seminary Fen: a Calcareous Jewel in the Minnesota River Valley," Fred Harris, Minnesota Department of Natural Resources
Plant-of-the-Month

June 1
"Notable Native Gardens of Minnesota," Diane Hilscher, Douglas Owens-Pike
Plant Sale

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Big Woods to be first heritage forest in state

by Harriet Mason

The Big Woods Heritage Forest is proposed as a new kind of forest system involving the Minnesota Department of Natural Resources and conservation partners.

What is the Big Woods?

French explorers named the unique forest in south-central Minnesota "Bois Grand" or Big Woods. This forest of oak, elm, maple, basswood, and other hardwoods once extended in a band 40 miles wide from St. Cloud to Mankato, covering over 3,000 square miles. Now, less than 7% of that native hardwood forest remains.

How is a Heritage Forest different from state forests?

It will be developed around an ecologically defined forest region, the Big Woods of south central Minnesota. It will consist primarily of private lands protected by term or perpetual conservation easements as well as private forest stewardship registry sites. Public lands may also be enrolled. Participation will be voluntary.

What types of land will be enrolled?

Existing forest, wooded pastures no longer grazed, old fields restored to native forest species, and other similar land of a forested character are likely candidates for enrollment. All lands must have Forest Stewardship Plans or similar management plans in place.

What does it mean if my land is within the boundary of the proposed Heritage Forest?

Absolutely nothing, unless you choose to participate. Voluntary donations of conservation easements will be solicited. Purchased

Continued on page 3

March 18 symposium to focus on newest restoration issues

Mark the Society's annual spring symposium on your calendars today! The day-long symposium, " Rare plants and local ecotypes: Emerging Issues in Native Plant Restoration," will be held Saturday, March 18, 2000, 8:30 a.m. - 4 p.m., at the Minnesota Valley National Wildlife Refuge Visitor Center. Co-sponsors are USFWS, Great River Greening, University of Minnesota Institute for Sustainable Natural Resources.

The morning's keynote speaker is Dr. Kayri Havens, manager of endangered plant research at the Chicago Botanical Garden, followed

continued on page 7

From the President

by Catherine C. Reed, President, MNPS

The energy was high among board members at our December meeting. Many valuable suggestions were made. I'll highlight some of them here. Those who are willing to work on any issue should contact any board member. (Please do! The more people involved, the more we can get done).

We are investigating getting an intern to identify and research conservation issues for the society, so that we can have solid information as a basis for making recommendations on issues as they arise. Plans for the spring symposium, "Keeping it Native," are underway. Long-time member and expert botanist Thor Kommedahl has written Plant Lore columns on 21 native species, and plans are to collect them into a short book to be published by the society.

Also, board member nominations will soon be needed. Consider serving on the board yourself (a three-year term): it is a worthwhile way to put conservation ideals into practice, a chance to meet other members, and an interesting and valuable experience in itself.

On Dec. 29 I travelled from Gunflint Lake in the Boundary Waters area south to the Twin Cities. The Gunflint was like another world: deep snow on the evergreens, birches, and red osier, with more snow falling heavily, everything white and silent. As I drove south, the snowfall ceased, the ground and trees became bare of snow, and the winter colors were revealed, with even a few hints of green grass beneath the brown. Oaks and other deciduous trees, some bare and some holding withered brown leaves, added interest to the agricultural and urban landscapes of central Minnesota. We are indeed fortunate to live in a state with such varied plant communities.

Best wishes to all for the coming millennium, and thanks to everyone for your work on behalf of the Society.

Outreach

It would be good to know what our members are doing to educate and inform friends, neighbors and children about native plants. If you have done any of this, please send a note to the newsletter so we can publish it. For example, I gave a presentation on acorns and oaks to the Minnesota Science Teachers Association meeting in October. If anyone would like to give a presentation on any aspect of native plants to this group next year (always on MEA weekend, of course) I can give you the contact information.

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Cynthia Lane, P.O. Box 3, Maiden Rock, WI 54750; 651-224-5463; 715-448-3303 clane@greatrivergreening.org; and clane@cannon.net. (Send to both.)

Harriet Mason, 905 S. 5th St., St. Peter, MN 56082-1417; 507-931-3253; cmason@gac.edu

Nancy Sather, 612-721-4803; nps@wavetech.net; nancy.sather@dnr.state.mn.us

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Gerry Drewry, ex-officio; address above.

Heritage Forest

Continued from page 1

easements may be a possibility if federal funds are available. Private forest stewardship registry will be encouraged.

How will a Big Woods Heritage Forest affect my property rights if I enroll?

It won't. You will still retain all your rights except the development rights if you have a conservation easement placed on your land title. You will be allowed to harvest timber, hunt, and recreate. Your land will not be open to public use.

Will conservation easements affect property taxes?

A landowner may request a lower tax status from their assessor. Individual counties can opt for an alternative, lower tax status for enrolled lands.

Who will administer the lands and the program?

The program will be administered by the DNR in cooperation with conservation partners. Individual landowners will continue to own and manage their lands.

What are the steps in establishing a Heritage Forest?

If sufficient township, county, and citizen support exists for this proposal, we will introduce a bill to establish a Big Woods Heritage Forest Program. Existing staff and program dollars along with federal programs and private grants will be used to implement the program on a voluntary basis in the Big Woods region.

What can counties, townships, organizations, and individuals do to support this program?

Adopt a resolution or write letters of support Contact your legislator..

Who supports the creation of a Big Woods Heritage Forest?

Rice, Wright, and Le Sueur Counties (Scott, Carver-pending), The Big Woods Project, The Nature Conservancy of Minnesota, Great River Greening, Friends of the Minnesota Valley, Minnesota Center for Environmental Advocacy, Minnesota Department of Natural Resources, Cannon River Watershed Partnership, Minnesota Land Trust-Cannon River Chapter, Rice County Forestry Committee, Minnesota Native Plant Society, Minnesota Audubon Council.

What happens if we do nothing to conserve the Big Woods?

Most likely, these lands will be developed into home sites over time, thus diminishing the ecological and scenic character of these undeveloped wildlands.

For additional information:

Contact Richard Peterson, DNR, 1810-30th St. NW, Faribault, MN 55021. Phone, 507-333-2012.

Naming the Plants

by Nancy Sather

This poem was first published in the Summer 1999 issue of Appalachian Heritage.

All the species of plants had names
before the rise of man.
Deer and rabbit knew them:
coarse-one, green-in-spring,
stringy-leaf,
bitter-stem, fuzzy-feel, autumn-
fare.

Wind knew them too:
supple-stem, shallow-rooted,
brittle-one.

Fire roared their names: susceptible,
resistant-one, dependent-seed.

Predators recognized them as they
moved
from shrub to shrub: silent-one,
cracks-where-you-step, rustles-
-when-you-pass, rattles-as-we-
walk.

Only we
thought to name them for ourselves:
Viburnum Rafinesquianum,
Crataegus Douglasii,
Linnaea borealis.

Nancy Sather's work has been published in a number of local literary venues, most recently in Sidewalks and Water-Stone, and in such out-of-state places as Orion, Black Bear Review and Appalachian Heritage.

Plant Lore

by Thor Kommedahl

What is false heather?

False heather, also called beach heather or woolly *Hudsonia*, is *Hudsonia tomentosa.* It is one of the needle-bearing, non-cone-bearing evergreen shrubs, and a member of the rockrose family, the Cistaceae.

Is this family temperate?

No, it is generally regarded as tropical and subtropical except for a few species of *Hudsonia* and *Lechea* (eastern USA), *Cistus* (California and the south), and *Helianthemum* or rockrose (east, middle west and west).

How did the plant get its name?

It was named after the English botanist and pharmacist William Hudson, who wrote "Flora Anglica" in 1762. *Tomentosa* refers to its downy appearance.

What does the plant look like?

It is a low, tufted, matted heath-like shrub with awl-shaped or scale-like leaves. Plants are evergreen but not coniferous, and are only six to eight inches tall. It has bright yellow flowers that are a fourth of an inch wide and appear in May to July. Flowers open only in sunlight and last one day.

Where does it grow?

It is a native Minnesota plant and grows in sandy areas along the Mississippi River and on the old sandy shore line of glacial Lake Agassiz. It is found on sand dunes and poor soil openings, and in outcroppings of St. Peter sandstone.

Can it be grown in gardens?

False heather is rarely cultivated because plants are difficult to grow and are short lived. According to "Hortus Third," plants can be propagated by seeds and probably by cuttings. *Hudsonia ericoides* has been cultivated as an ornamental.

Field trip ideas needed

Contact Deb Anderson at 507-867-4692, if you have an idea for a field trip or if you would like to lead one.

Tallgrass aspen parkland is distinctive ecosystem

By Robert Dana, Minnesota DNR

The aspen parkland ecosystem is the northernmost expression of the transition zone between prairie and forest ecosystems. Most generally described, it is a mosaic of prairie and aspen woodland where drought and fire are frequent enough to prevent succession to forest but not so frequent as to eliminate trees altogether. Aspen parkland extends in a band from northwestern Minnesota across southern Manitoba, Saskatchewan, and Alberta. This can be subdivided on the basis of the associated grassland type: fescue grassland at the western end, mixed grass prairie across most of the middle part, and from about Winnipeg southwards, including northwest Minnesota, tallgrass prairie.

The tallgrass aspen parkland occupies a very low-relief landscape of smooth ground moraine further subdued during inundation by Glacial Lake Agassiz. Beach ridges formed along longer-lived shorelines of Lake Agassiz are the most prominent topographic features. As a legacy of the period of submergence soils are a complex mosaic of water-modified till (often very stony), sands, silts, and clays. Localized sand blankets were formed by outwash or streams draining into the lake and winds have modified some of these into dune formations. Shallow veneers of sedge peat are common in more poorly drained areas.

As the name implies, herbaceous species typical of northern tallgrass prairie dominate the open grassland component, and an abbreviated list of woodland and forest species is associated with the more wooded parts. Trembling aspen and balsam poplar are the dominant tree species, and bur oak is usually present, dominating in dry sites. Bur oak barrens occupy the driest sites. Woodland patches tend to be small, composed mostly of juvenile trees because of the frequency of fire. A striking feature is the abundance of shrubs; in the case of the prairie, this results in a distinctive community type, brush-prairie, in which shrubs may form up to 70 per cent of the cover. Rich fen, dominated by fine-leaved sedges, is a common wetland type in the parkland, occurring on moderately decomposed peat. High local concentrations of mineral salts in these peats support an unusual assemblage of plant species.

A number of rare or uncommon plants are part of the parkland ecosystem. The hoary fruited willow, *Salix maccalliana*, is common in the Minnesota parkland but quite rare elsewhere in the state. A major population of the western white-fringed orchid, *Platanthera praeclara*, occurs in Manitoba with a smaller satellite population a few miles south in Minnesota. The sedge *Carex garberi*, known from only a single record in Minnesota outside the parkland, occurs in some abundance in rich fens here.

The tallgrass aspen parkland is exemplary breeding habitat for sandhill cranes and sharptail grouse. The meadows and especially the fens are prime habitat for the state-listed yellow rail and sharptail sparrow. Moose are common, and the timber wolf has made a tentative reentry. There is even a small number of elk that maintain a somewhat secretive presence here.

The parkland ecosystem is expressed only on a fairly large scale — in continuous blocks of hundreds, or better, of thousands of acres. Further, the delicate balance between aspen woodland and prairie here requires large areas for natural ecosystem management with fire. Finally, sandhill cranes, moose, and wolves need large areas to support viable populations. Fortunately, there are several large blocks remaining in Minnesota, 12 of these in eastern Kittson County, comprising more than 115,000 acres.

This article is an abstract from a talk Robert Dana gave at a Minnesota Native Plant Society Meeting.

Nominate a director

Terms of three members of the MNPS board of directors expire this spring. The nominating committee is seeking candidates for these three-year terms. To nominate a member — or yourself — contact Nancy Sather, chair of the nominating committee, at one of the numbers listed on page 2.

The board meets at 6 p.m. before each regular meeting and also has quarterly meetings, usually on Saturdays.

MNPS listserve provides up-to-date information on native plants

by Charles Umbanhowar, Jr.

The Minnesota Native Plant Society listserve is available to anyone interested in Minnesota native plants. Currently there are about 90 subscribers to the list. This is a low-traffic list, meaning you will not be overwhelmed with messages or SPAMs (unrequested email from advertisers). Past messages have included announcements about upcoming field trips, questions about how to germinate acorns, and plant salvage.

To add yourself to the list or to drop from the list, simply send a message to:
mn-natpl-request@stolaf.edu
including subscribe or unsubscribe — as appropriate — and your name in the body of the message. You will automatically be sent instructions on using the listserve. Past messages are archived and can be accessed through a WWW browser at:
http://www.stolaf.edu/cgi-bin/mailarchivesearch.pl?listname=mn-natpl

Proposed Amphitheater could harm Minnesota Valley Refuge

The U.S. Fish and Wildlife Service is strongly objecting to the proposed construction and use of the Q-Prime Amphitheater about five miles south of Shakopee, in Scott County, Minnesota Valley National Wildlife Refuge Manager Rick Schultz has announced.

The 19,250-seat indoor/outdoor facility would be located within a few hundreds yards of the Louisville Swamp Unit of Minnesota Valley National Wildlife Refuge (Refuge). The amphitheater is designed to project amplified music and crowd noise over this important wildlife and natural resource area. It would be built by Q-Prime, Inc., of New York City,

According to Schultz, "We are not opposed to economic or industrial development of lands adjacent to Refuge lands, but we are opposed to those developments that will negatively impact the Refuge and its wildlife resources and the visitors that use these areas. We believe this amphitheater, as proposed, undermines the purposes for which Louisville Swamp was acquired and is managed as part of the National Wildlife Refuge System."

Upon preliminary review of the Environmental Assessment Worksheet for this project, Schultz believes that this noise-generating facility will intrude upon the quiet and solitude that bald eagles, great blue herons, common egrets, and other wildlife species currently enjoy at this location. The proposal also has the potential to destroy rare native prairie located on site, an area that the U.S. Fish and Wildlife Service plans to acquire as part of the Louisville Swamp Unit.

Refuge public-use activities such as bird watching, wildlife photography, and wildlife interpretation will be negatively affected by amplified music, noise spikes, crowd noise, and applause, especially during late afternoon and evening hours when wildlife viewing is at its best, Schultz said.

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The EAW is available for review at http://www.co.scott.mn.us. Schultz encourages individuals and organizations who have an interest in the refuge to review the EAW and submit their comments to Scott County by the Jan. 12 deadline.

The Minnesota Valley National Wildlife Refuge was established in 1976 out of citizen support for the conservation and management of the fish and wildlife resources of the Lower Minnesota River Valley. The refuge currently consists of 10,500 acres of fish, wildlife, and plant communities located in eight units along a 34-mile stretch of the Minnesota River between Bloomington and Jordan.

The refuge is managed by the U.S. Fish and Wildlife Service as part of the National Wildlife Refuge System and provides a variety of wildlife-dependent recreational opportunities including hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation.

Additional information about the Refuge may be obtained by calling (612) 854-5900 or stopping by the Refuge Visitor Center, 3815 East 80th St., Bloomington. Comments, concerns, or questions about the Q-Prime Amphitheater proposal may be directed to Rick Schultz, whose direct line is (612) 858-0701.

from the USFWS

Goblin fern comments sought

Comments and concerns are solicited regarding an investigation of the effects of timber management on the goblin fern *(Botrychium mormo)* in the Chippewa National Forest. For more information contact John Casson at 218-335-8606.

565-mile walk will showcase best prairies of Missouri

Missouri prairie lovers are planning a "Lek Trek," a 565-mile walk through the best of what is left of Missouri's tallgrass prairie. The walk will begin at the Iowa state line near Hatfield on July 21, 2000, and end at Prairie State Park near Lamar, MO on October 14, 2000.

The Lek Trek will travel through 16 communities and/or public prairies, and many special events related to prairie conservation and history will be held. Prairie lovers are invited to join the core group on certain days, with advance registration. For more information contact Sharon Gough, Missouri Department of Conservation, P O Box 106, El Dorado Springs MO 64744; phone 417-876-3388; e-mail <goughs@mail.conservation.state.mo.us>.

St. Paul consortium seeks native plant educators

The Saint Paul Neighborhood Energy Consortium (NEC) is seeking to contract with individuals knowledgeable about native plants and with strong communication skills to work on several aspects of a new program that encourages the use of native plants in residential landscaping.

Landscape architects, landscape designers and educators with experience in native plants are encouraged to contact the NEC for more information on specific contract opportunities. Call Shelley Shreffler at (651) 221-4462 for more information.

Gibbs Farm Museum expands its restorations

The Gibbs Farm Museum in Falcon Heights has established traditional Dakota and pioneer gardens, a tallgrass prairie restoration and a heritage orchard on their property. An oak savanna restoration and a Native American medicine garden are planned for spring. For more information call 651-646-8629.

Moonwort Madness

by Cindy Johnson-Groh and Donald Farrar

Have you noticed the recent craze of "Moonwort Madness?" Perhaps you've found yourself caught up in this madness, or perhaps like more "sane" individuals, you have wondered why moonworts have captured the imagination of young, old, professional, and amateur alike. Or perhaps you've simply wondered ...

Just what the heck is a moonwort anyway? Is it...
a. A fern found once in a blue moon.
b. A fern which comes and goes with the phases of the moon.
c. A mushroom that transforms into a fern when exposed to moonlight.
d. A pale fern which never sees the light of day.
e. A plant with moon-shaped leaves.

Okay, so these are all nonsense ... or are they? Let's examine the options.

a. A fern found once in a blue moon.

Indeed, some moonworts are very rare, which no doubt contributes to their mystique. Much of the rareness can be attributed to their size. Moonworts are tiny ferns in the genus *Botrychium* subgenus *Botrychium*. Each year the plants have the ability to produce one above-ground leaf which has 2 portions, a spore-bearing portion and a photosynthetic portion. All plants in this subgenus are small (< 20 cm) and relatively difficult to find. Fortunately, however, once the search image is learned it is possible to find many of these small ferns. Not all species are abundant, and some are very rare and perhaps can only be found once in a blue moon.

b. A fern which comes and goes with the phases of the moon.

Not only are some species of moonworts rare, but their behavior is downright fickle. Some years they are abundant; in others, they are not. Moonworts, like many orchids, have the ability to skip a year and not emerge to produce a leaf. Their disappearance in some years compounds the issue of rareness. It is common for individuals to skip years and subsequently re-emerge healthy and robust. No one has observed them "coming and going with the phases of the moon," but they have baffled biologists with their ability to annually skip years, then reappear.

c. A mushroom that transforms into a fern when exposed to moonlight.

How ridiculous, you mutter to yourself. Ah, but not so! *Botrychium* have underground gametophytes which are not photosynthetic. They live longer than most fern gametophytes and contain mycorrhizal fungi. These mycorrhizae appear to be extremely important to *Botrychium* sporophytes too. Indeed, the authors are convinced that the mycorrhizae are the primary source not only for water and minerals, but of sugars as well. This may account for many aspects of their bizarre behavior. So yeah, it doesn't take moonlight to transform these plants, but functionally these tiny ferns may be more mushroom than fern!

d. A pale fern which never sees the light of day.

One of the hardest things about finding moonworts is learning to look for them underneath the leaf litter. Only a small portion of the population actually emerges above the litter. Many more can be found by parting the litter and looking underneath. Some of those found underneath the litter may be extremely pale or even totally white. Albino moonworts? Yes! They are fairly common in some species. So if these ferns receive carbohydrates from the mycorrhizae and are buried in the leaf litter, is it no wonder that they aren't always green and photosynthesizing?

e. A plant with moon-shaped leaves.

Botrychium lunaria was named by Carl Linneaus himself for the pinnae which have a lunar-crescent shape. The common name, moonwort, comes from this species. However, not all moonworts have crescent-shaped pinnae. The shapes of the pinnae are extremely variable and often make identification of species very difficult. This difficulty of identification and the ever-present possibility of a new species discovery is without doubt one factor which drives Moonwort Madness.

So now that we know what moonworts are, we can proceed with the question at hand. What is it about these peculiar plants that causes Moonwort Madness? It all began, so it appears, through the infectious energy and enthusiasm of Herb and Florence Wagner, Michigan. They have succeeded in converting self-respecting professional and amateur pteridologists into crazed individuals who crawl across prairies, mountain meadows and woodlands in search of these elusive plants.

Not long ago hunting for *Botrychium* was lonely and perhaps considered eccentric despite the Wagners' interest, along with that of their disciples. In recent years, however, Moonwort Madness seems to have swept across the country. Herds of volunteers now routinely can be seen grazing across the landscape on hands and knees in search of these mysterious ferns. Everyone from forest service personnel to rare plant enthusiasts search endlessly for these tiny gems.

Still, we can't help but wonder if there is something we haven't thought of about moonworts that captures the attention of so many people. Are moonworts different from any other rare plants? We've heard a few reasons, the desire to find something rare, the ability to contribute when so little is known

Continued on page 7

Moonwort Madness

Continued from page 6

and even the choice company of other moonwort hunters. So what is the cause of this recent epidemic of Moonwort Madness? Why do you hunt for moonworts?

Cindy Johnson-Groh is an assistant professor at Gustavus Adolphus College in St. Peter and has investigated the ecology, underground structure and population demographics of several midwestern and western Botrychium. *Donald Farrar is a professor at Iowa State University in Ames and has investigated the evolutionary and systematic relationships between* Botrychium *species.*

Symposium

Continued from page 1

by a panel discussion of the legal framework for rare plant protection and seed certification in Minnesota. Afternoon sessions include an overview of Minnesota landscape ecoregions, development of ecoregionally appropriate species lists, a presentation on the Iowa Ecotype Project, and a discussion examining several case examples of Minnesota restorations.

Nancy Sather, chair of the symposium committee, urges members to register in advance because the refuge can accommodate only 125 people. New or renewing members may join at the time of registration.

Costs for the symposium, including a box lunch, are as follows.

Advance registration
MNPS Members - $15
Non-members - $20
Registration at the door
MNPS Members - $20
Non-members - $25

Society volunteers are needed to assist with refreshments and registration. For information on the symposium call (651) 772-7574 after Jan. 28. To volunteer, call (612) 721-4803 and leave a message on the answering machine, or sign up at a MNPS meeting.

Something Wild is Coming to Your Neighborhood

by Meredith Cornett

If you're like a lot of Minnesotans, feeling close to nature is a big part of what you look for in a place to call home. Our lakes and streams, forests and meadows, the sights and sounds of wildlife around us — these features make our communities healthy and attractive places to live.

In the seven-county Twin Cities metro region, though, much of the habitat that forms the basis for our outdoors heritage has been lost to urban growth. In many places, fragmented patches that support fewer species are all that is left of these treasured natural areas. If we want to continue enjoying nature's many benefits, we need a fresh approach.

Neighborhood Wilds, a new program offered by the Minnesota Department of Natural Resources, provides just such an opportunity. Operating at the grassroots level, neighbors can work with neighbors to restore and improve habitat. Through that process, they can forge stronger communities and a healthier environment for plants, animals, and humans alike.

Just as the houses on your block make up a neighborhood, your yard and those of your neighbors together are part of a neighborhood habitat or ecosystem. The health of that ecosystem depends on the actions of you and your neighbors.

Our natural heritage can continue to reward us in the future if homeowners are willing to work together at improving the health of neighborhood ecosystems. By planting more native grasses, wildflowers, trees, and shrubs, yard work can be reduced while creating a neighborhood environment that is friendly to wildlife and beautiful to look at. By thinking neighborhood-wide and working across property lines, you can provide larger areas of native habitat and corridors for movement of native plants and animals.

Neighborhood Wilds will provide your neighborhood with help and advice you need to accomplish these worthy goals. The program provides assistance at a variety of levels.

Many neighborhoods start by arranging a site visit with Neighborhood Wilds staff to look around the neighborhood and begin discussing local natural resource concerns. At a follow-up evening meeting, all neighbors are invited to learn more about the program, get to know each other better, and talk about the local ecosystem. Each homeowner receives a packet of information, including an aerial photo of the neighborhood, general plans for native landscaping, an overview of current and historical habitats of the area, and a menu of suggested neighborhood activities.

Many neighborhoods then decide to take on a project. Neighborhood Wilds staff help them with the planning and implementation, including identifying cost-share grant programs. Examples of past and current projects include:

- Enhancing native plant diversity around a neighborhood pond in Lake Elmo
- Developing a sound management plan for a neighborhood forest in Shakopee
- Restoration of native oak savanna habitat in a Woodbury neighborhood

If you and your neighbors are interested in participating in the program, you can get started by calling the number below. At this time, Neighborhood Wilds is only available to neighborhoods in the seven county metro area (Anoka, Ramsey, Washington, Dakota, Scott, Carver, and Hennepin Counties).

For more information about Neighborhood Wilds, call Meredith Cornett, Community Forest Ecologist, at 651-772-7574.

Minnesota Native Plant Society
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St. Paul, MN 55108

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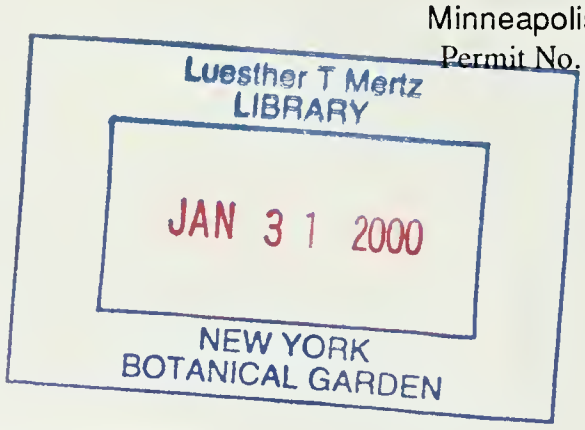

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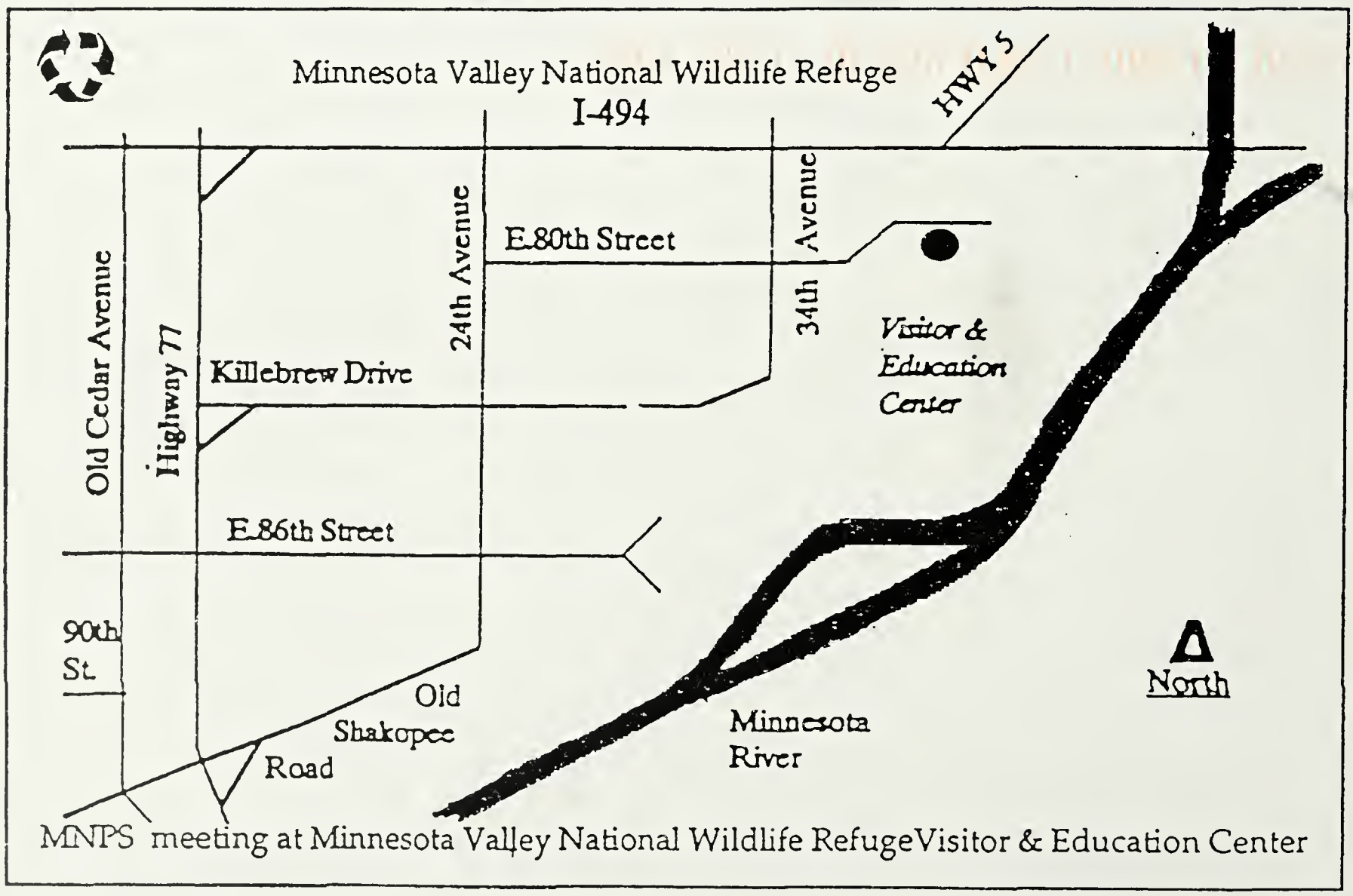

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Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 19 Number 3 **Spring 2000**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600
612-335-2323

6 - 6:30 p.m. — Board meeting, Room B
6:30 - 7 p.m. — Refreshments, information, Room A
7 - 9 p.m. — Program, Society Business
9 - 9:30 p.m. — Socializing
9:30 p.m. — Doors locked

Programs

May 4
"Seminary Fen: a Calcareous Jewel in the Minnesota River Valley," by Fred Harris, Minnesota DNR
Plant-of-the-Month: Twisted Yellow-eyed Grass, by Jason Husveth
Election of board members

June 1
"Western Prairie Fringed Orchid: Monitoring and Research," by Nancy Sather
Plant Sale following program

Oct. 5: Next meeting

Plant sale guidelines

Members are urged to donate native plants for the June 1 sale. Plants must be from a garden or started from seed. Do not dig wild plants. Bring them by 6:30 p.m. Each plant must be in an individual container and labeled. Each buyer may select three plants the first time. Volunteers who help at the sale will have the first choices, followed by plant donors and then by others. To volunteer, call Gerry Drewry at 651-463-8006.

MNPS Web Site
http://www.stolaf.edu/depts/biology/mnps

2000 symposium is a huge success

by Nancy Sather

Over 240 people attended the Native Plant Society's March 18 symposium, which was held at the School of Environmental Studies near the Minnesota Zoo. The program, titled "Rare Plants and Local Ecotypes: Emerging Issues in Native Plant Restoration," attracted a mixed crowd of NPS members, gardeners, professional restorationists, and botanists, drawing 68 new members into the society.

A number of co-sponsors lent financial support or advertisement to the effort. The Society is especially grateful for the support of the University of Minnesota's Institute for Sustainable Natural Resources, directed by Barbara Coffin, which underwrote travel expenses for both out-of-state speakers. Other co-sponsors included the Chicago Botanical Garden, the U.S. Fish and Wildlife Service, "The Prairie Reader," The Minnesota Chapter of the Wildlife Society, the Minnesota Department of Natural Resources, and the Conservation Biology Graduate Program at the University of Minnesota.

A group of society members and nonmembers were involved in planning and implementation. This group included Nancy Albrecht, Lori Biederman, Paul Bockenstedt, Meredith Cornett, Hannah Dunevitz, Ellen Fuge, Bob Jacobson, David Johnson, Cynthia Lane, Camille LeFevre, Judith Miller, Ann Pierce, Nancy Sather, and Jan Shaw Wolff.

Biological issues in rare plant reintroduction

Dr. Kayri Havens, manager of endangered plant research, Chicago Botanic Garden, provided the keynote address, "To plant or not to plant: biological issues in rare plant reintroduction." Dr Havens is a regional leader in collaborative programs for conservation of globally rare plant species from the Upper Midwest. Her talk summarized genetic and biological issues that have bearing on restoring, augmenting and introducing endangered plants. A retrospective of this talk is presented on page 6 of this newsletter.

Biological issues in restoration of non-rare plants

For the biological perspective on restoration of non-rare plants, Dr. Daryl Smith, director of the Iowa Ecotype Project at the University of Northern Iowa, explained the rationale and process for dividing the state of Iowa into ecotype regions and increasing the amount of seed of known regional origin available for Iowa restorations. The project was

Continued on page 4

Three nominated for positions on board; election is May 4

Meredith Cornett, Esther McLaughlin and Ethan Perry have been nominated for three-year terms on the MNPS Board of Directors. The election will be May 4, and additional nominations may be made then. Biographies submitted by the three candidates are on this page and the next page.

Meredith Cornett

Meredith Cornett grew up in Georgia and earned a B.A. in biology from Oberlin College in Ohio. She developed an interest in ecological restoration and conservation while working for the Center for Plant Conservation in Boston and as a Forestry Extensionist in the Republic of Panama. She earned a M.S. (1996) and Ph.D. (2000) in forestry from the University of Minnesota, completing studies of forest ecology and ecological restoration in conifer-hardwood forests of northeastern Minnesota.

In her current position as a forest ecologist with the Minnesota Department of Natural Resources, Meredith provides assistance to communities working on ecological, restorative and natural resource management projects.

Ethan Perry

A native of coastal Rhode Island, Ethan Perry began his career exploring the salt marshes, oak forests and pine barrens near his home. His advisor at Tufts University opened the door for him into the fascinating world of native plants.

Although Ethan labored in the University herbarium and restored native vegetation to a damaged wetland, his later work wandered through a wide range of ecological studies. Some of that research was in Panama, where he married Meredith Cornett. Later, he earned a M.S. in wildlife conservation at the University of Minnesota, where he studied factors influencing the reproductive success of forest birds. Much of his other work in Minnesota has involved natural community mapping and conservation.

In his current position with Great River Greening, he is mapping land cover in the Mississippi and Minnesota River valleys, and he manages an interagency team that prioritizes and coordinates restoration efforts in the metropolitan area.

Minnesota Native Plant Society's purpose

(Abbreviated from the Bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

The Minnesota Native Plant Society

Minnesota Plant Press
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E-mail: gdrewry@pioneerplanet.infi.net

The Minnesota Native Plant Society is a tax-exempt 501 (c)(3) organization as determined by the U.S. Internal Revenue Service. Contact the society by e-mail at: mnps@altavista.net. Dues for regular members are $12 per year; for students and seniors, $8; for families, $15; for institutions, $20; and for donors, $25. All dues include a newsletter subscription. Four issues are published each year. Make checks out to: Minnesota Native Plant Society; mail them to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108.

MNPS Board of Directors

President: Catherine Reed, University of Minnesota Department of Entomology, 219 Hodson Hall, 1980 Folwell Ave., St. Paul, MN 55108; 612-644-3765; reedx012@tc.umn.edu

Vice-President: Joel Dunnette, 4526 Co. Rd. 3 S.W., Byron, MN 55920; 507-284-3914 (W); 507-365-8091 (H); dunnette.joel@mayo.edu

Treasurer: David Johnson, 6437 Baker Ave. N.E., Fridley, MN 55432-5163; 612-571-6278; david.johnson@usfamily.net

Secretary: Virginia Card, Metropolitan State University, 700 E. 7th St., St. Paul, MN 55106; 651-772-3799 virginia.card@metrostate.edu

Cynthia Lane, P.O. Box 3, Maiden Rock, WI 54750; 651-224-5463; 715-448-3303 clane@greatrivergreening.org; and clane@cannon.net. (Send to both.)

Harriet Mason, 905 S. 5th St., St. Peter, MN 56082-1417; 507-931-3253; cmason@gac.edu

Nancy Sather, 612-721-4803; nps@wavetech.net; nancy.sather@dnr.state.mn.us

Roy Robison, 1833 Monroe St. NE, Minneapolis, MN 55418; 612-788-4621; landscapealt.earthlink.net

Deborah Strohmeyer, 7900 Wyoming Ave. S., Bloomington, MN 55438; 612-943-9743; debstrohmeyer@yahoo.com

Gerry Drewry, ex-officio; address above.

Esther McLaughlin

I come from California originally, and majored in botany at Berkeley where I also got a Ph.D. in botany in 1968. My interests originally were in green plants generally, and aquatic plants specifically, but I have developed my interest in and expertise in fungi since coming to Minnesota. I have lived in Minneapolis since 1969 and have taught in the Biology Department at Augsburg College since 1989. My e-mail address is:
mclaugh@augsburg.edu.

I served once in the past on the MNPS board and have been involved in organizing several of the society's symposia, including the first one. Now I get the postcard out each month, with the help of Heather Olson, our secretary at Augsburg. My specific interests include encouraging the MNPS to remain helpful and interesting to all its members by continuing to present speakers, programs, and symposia which appeal to a broad range of native plant enthusiasts. I think we've done a good job in the past, and I want to help this continue. I also am interested in exploring the possibility of offering half-day or day-long lab and/or field workshops for members (or others) to learn about topics such as the basics of flower structure and classification, mosses, or specific difficult groups like grasses.

Board of Directors is planning projects, speakers for next year

The Minnesota Native Plant Society Board of Directors met March 25 at President Catherine Reed's house. Following are highlights of the meeting.

Symposium

Nancy Sather reported that the symposium, "Rare Plants and Local Ecotypes," was a big success, with more than 240 people attending (over twice the previous record). The financial balance was positive, and 68 new members joined. A complete report will be made in June. The board thanked Nancy for her work in making it a success. Nancy attributed the outcome to several factors, including such hard workers as Lori Beidermand and Camille Lefevre; the cooperation of several organizations, including Great River Greening; and good advertising.

Board positions

Ethan Perry, Meredith Cornett and Esther McLaughlin have been nominated for the three positions. that will be open. The election will be at the May meeting. Present board members are as follows. Third-year (departing) members are Catherine Reed, Roy Robison and Dave Johnson. Second-year members are Virginia Card, Joel Dunnette and Cynthia Lane. First-year members are Harriet Mason, Nancy Sather and Deb Strohmeyer.

Treasurer's report

The society's budget was in the black again for the fiscal year 1999. The largest single source of income (more than $3,000) was from memberships. The largest expenses were printing (more than $1,500) and postage (almost $1,000).

Program committee

The program committee is collecting suggestions for next year's speakers and topics and is striving for a balanced program. Potential topics include the Nature Photography Club, botany on the North Shore, The Nature Conservancy, the Dakota County LCMR project, Great River Greening, the DNR Conservation Connection, National Forests in Minnesota, radicals (such as the Hiawatha expansion protesters) and the BWCA blowdown of 1999. Members with suggestions or who would like to volunteer to give a Plant of the Month talk should contact Virginia Card.

Proposed MNPS grant project.

Dave Crawford has suggested setting up a program to help homeowners purchase and plant native plants in their gardens. After a lengthy discussion, the board voted for Deb Strohmeyer to convene an ad hoc committee composed of Joel Dunnette, Dave and herself to investigate issues relating to setting up such a project, and to develop a set of rules and guidelines to be presented to the board at the June meeting.

Board member profile: Deb Strohmeyer

Deborah Strohmeyer was born in Oklahoma but did not live there long. Her dad was in the military, which resulted in frequent moves. Her life-long enjoyment of plants began early, via family camping trips. Deborah's first backpacking trip was at age six. As an adult, her interest in plants took an applied emphasis.

Deborah earned a B.S. in Renewable Natural Resources at the University of Arizona. Two weeks after graduation, she was in Idaho researching wapiti in a sagebrush desert. In 1992 she finished her Master's degree in wildlife ecology. Next she went to Colorado, where she worked with pronghorn on the Pawnee National Grassland for a few years.

In Colorado, Deborah got married and had her first son. In June 1998 she moved to Bloomington, where she purchased a house on a 1/2-acre lot. Deborah and her husband are avid birders and wanted to increase the wildlife value of their property. In her search for information on native plants having wildlife value, she stumbled across the MNPS website and promptly joined the MNPS.

Last April, when Deborah volunteered to be on the board she was unaware that her second son was on his way. Although she has had to miss some meetings, she has been responding to technical inquiries sent to the MNPS.

Symposium

Continued from page 1

spurred by needs of the Iowa Department of Transportation for local seed and the fact that market forces made it much cheaper for the highway department to use western seed than seed of Iowa origin. The objective of the project was to increase the amount of Iowa-origin seed available, make it competitive with western seed, and localize its origin as much as possible.

After dividing the state into regions, local seed is obtained from each region and the harvested pool of collected seed is grown out by the Natural Resource Conservation Service in ecotypically separated plots in Ellsburg, Mo. Once the amount of seed has been sufficiently increased, it is released back on the Iowa market as Iowa certified seed. At the present time, 70 species of native seed from 117 sources are being marketed by 79 Iowa growers through this program.

Species lists for metro area

Even when seed is available, how can we know what is appropriate to plant in any given situation? A follow-up presentation by Dr. Cynthia Lane of the Great River Greening project answered this question for the Twin Cities Metro area by explaining a collaborative project that uses plant community data collected by the DNR's County Biological Survey and Natural Heritage Nongame Research Programs to generate lists of species appropriate for restorations of particular plant communities within the region.

Minnesota case studies

Minnesota restoration activities occur on both the grand, collaborative, scale and through the efforts of individuals attempting to restore appropriate species or communities on their own land. Two case studies closed the morning session.

Dr. Carolyn Carr of Great River Greening explored the possibilities of multi-partner collaboration with a series of slides showing the involvement of youth, corporate interests and local governments in restoring riparian corridors through downtown St. Paul.

Welby Smith, wearing his hat as a private property owner and plant society member, closed the morning with a sometimes-humorous account of his attempts to establish an ecotypically appropriate savannah restoration on his Wright County land. In case you didn't hear it, aspen is not one of the species available from the state forest nursery, but the DNR's Forest Stewardship planning program can provide valuable assistance to individuals seeking to manage and enhance privately owned forests.

Legal and seed certification issues

Opening afternoon panelists presented brief overviews of the legal framework for native plant protection and seed certification in Minnesota. Panelists included Ben Lang, field services manager for the Minnesota Crop Improvement Association; Robert Jacobson, supervisor for the Turf Establishment and Erosion Control Unit of the Minnesota Department of Transportation; Nancy Sather, botanist/ecologist with the Minnesota Natural Heritage and Nongame Research Program; and Steven Shimek, coordinator of the Minnesota Department of Agriculture Nursery Inspection and Certification Program. Ben Lang is chair of MCIA's Native Grasses and Forbs Committee, which developed standards for the certification of seed of native plants in Minnesota. Bob Jacobson is responsible for the program that evaluates and converts roadsides to native species. Steve Shimek's responsibilities include administering Minnesota Statute 17.23, Conservation of Wildflowers. Nancy Sather served as a spokesperson for the Minnesota Natural Heritage and Nongame Research Program, which administers the state endangered species law.

The Minnesota Seed Certification program assures that the purchaser is obtaining seed of known origin. Certification requires identification of the locale from which the seed comes, ensures that the land is not contaminated, that seed has been isolated from seed of the same species from other geographic areas by a distance of 165 - 1,320 feet, that records are kept on the seed and that both the field and the seed have been inspected. Certified seed must pass Minnesota standards with respect to weed content.

MnDOT identifies certain corridors as wildflower routes and is working to increase the numbers of miles of rights-of-way in native vegetation. For this reason MnDOT has an interest in the availability of local provenance seed at competitive market rates. Native plant lovers need to be aware that plants growing in Minnesota rights-of-way are not free for the taking without securing permission from the appropriate level of government that maintains the road. This means the regional offices of MnDOT for state highways, and the county or township for county and township roads.

The Minnesota Natural Heritage and Nongame Research Program has statutory authority for species listed under the Minnesota Statute 84.0895, Protection of Endangered and Threatened Species. Under this statute it is illegal to take, import, transport or sell all or part of an endangered plant without a permit from the DNR. This includes import into the state and collection within the state of pollen, leaves, flowers, seeds, and whole plants. Permits are customarily issued only for non-redundant research and activities that are judged to be necessary for the long-term natural viability of the species. Anyone contemplating restoration activities that involve Minnesota listed species should contact Bonita Eliason, coordinator, Minnesota Natural Heritage and Nongame Research Program, DNR Box 25, 500 Lafayette Road, St. Paul, MN, before taking further action.

Minnesota Statute 17.23, Conservation of Wildflowers covers the Nelumbo water lily, all

gentians, trilliums and lilies. The Department of Agriculture approaches this law within the context of its responsibility to certify nursery stock. Plants can be collected from private land for personal use without a MDA permit but must be taken with written permission of the landowner. Plants intended for sale need to be cultivated by a grower with a nursery stock grower's certificate.

If plants are being dug with the intention of sale, contact Steven Shimek, Nursery Inspection and Certification, Minnesota Department of Agriculture, 90 Plato Boulevard, St. Paul, before taking further action.

Vendors' views

The day's concluding vendor roundtable gave symposium attenders a glimpse of some of the concerns of native plant dealers. Panel participants included Shawn Fritcher, native seed production manager, Ion Exchange Nursery; Roy Robison, owner and manager, Landscape Alternatives; and John Pauley, manager, Prairie Creek Farm, Prairie Restorations, Inc. All three operations obtain material from native remnants. Ion Exchange and Prairie Restorations deal in both seeds and plants. Landscape Alternatives deals only in growing plants.

One of the frustrations that arose from this panel is the fact that agencies that are major buyers of native seed usually have to put jobs out on bid and in the case of grasses, the price of western seed may out-bid local seed. Project managers sometimes lag in lining up sources for local seed until the 11th hour, and the industry is one in which seed or plants could be provided with advance planning, but not at the last minute.

Comments from the panel suggest that there needs to be more stringent early oversight on the part of buyers to assure that managers and middlemen are really doing their best to secure the local plant materials that are actually available on the market.

Conference on North American Prairies to be in Mason City, Iowa

North American Prairie Conference 2000 will be held in Mason City, Iowa, July 16 - 20.

"It is close enough that people interested in prairie should really consider going," Joel Dunnette said. "I have attended a couple of these meetings in the past, and enjoyed them. The web page has quite a bit of information; take a look."

Ellen Fuge will be attending and is willing to car pool. Contact her at:

Ellen Fuge
Scientific and Natural Areas Program
500 Lafayette Rd., Box 25
St. Paul, MN 55155-4025
651-297-3288

Information on the conference and a form to request registration materials are on the website:
http://www.niacc.com/prairie2000/

You may also request information and materials from Carol Schutte by mail, phone, fax or e-mail at:

Carol W. Schutte
North Iowa Area Community College
500 College Drive
Mason City, Iowa 50401
515-422-4319
fax: 515-422-4115
chutcar@niacc.cc.ia.us

Prairie Smoke award

by Deb Anderson

The Olmsted Environmental Commission presented an award for Environmental Excellence to Prairie Smoke of the Chatfield Fish and Game Club. This award is given for contributions to environmental quality in the community.

Prairie Smoke received this award for its continuing spring and nature area restoration on a corner of the Chatfield High School Campus and for its roadside vegetation work.

Plant Lore

by Thor Kommedahl

What is trillium?

Trillium, also called wakerobin, is a member of the lily family. Four species are native to Minnesota: *T. grandiflorum, T. cernuum, T. flexipes, and T. nivale.*

How did it get its name?

Obviously, "tri" comes from the Latin *tres* and refers to the fact that its parts are in threes: three petals, three sepals, three leaves.

What are some of its features?

Trillum is in part of the family that has fleshy berries instead of dry capsules. *T. grandiflorum* is the showiest, and *T. cernuum* hides its flower under a leaf. Petals are white to pink. They are perennials and overwinter as rhizomes. Fruits mature by midsummer.

What about the fruit?

The fruit is a light-green, one-inch capsule, on the end of a long stalk. As seeds mature, the fruit splits on one side and the fruit-bearing stalk bends toward the ground where the sticky seeds fall in clusters. Each seed has material (strophiole) attractive to ants. Ants carry seed and strophiole back to their nests, sometimes as far as 30 feet away.

Where are trilliums found?

T. cernuum is the most widely distributed in Minnesota woodlands and is found in most counties. *T. flexipes* grows in southeastern and *T. grandiflorum* in central eastern counties. *T. nivale* is a tiny trillium that grows on limestone soil in woods of southeast Minnesota and blooms with the crocuses before the snow melts.

Are the plants edible?

Most trilliums should not be picked, but leaves of *T. grandiflorum* have been used in salads. Roots were once used in medicine (introduced into the "Materia Medica" in 1830) but are not so valued today.

To Plant or Not to Plant

Some take-home thoughts from Dr. Haven's keynote address

by Nancy Sather

Over 12% of the world's flora are listed in the IUCN "Red Book" as endangered, with projections that as high as a third of the world's flora could be extinct by the year 2050. The flora of North America is the world's fourth most endangered. Of the 722 federally listed plant species, only 12% are actually protected by the Federal Endangered Species Act. Given these facts, planting more of an endangered species is often the first thought that comes to mind. But is this always appropriate? As the symposium audience discovered, the answer is highly dependent on the ecological setting, genetics and reproductive biology of the species, and the ability to implement and follow-up on restoration activities for a period of years. What is appropriate in one case is not necessarily appropriate in another. This is one reason plans for re-introductions are best done by professionals with a knowledge of the target species' life history, genetics and environmental needs.

Multiple factors affect the persistence of populations. These include environmental influences, demographic fluctuations (changes in the size of populations and the proportion of reproducing and non-reproducing individuals), and genetic factors. The interplay of reproductive mechanisms and genetics is the key to population success. Many species have unique mechanisms to assure that they are either cross-pollinated or self-pollinated. Some species permit both types of pollination. Species that customarily outbreed can suffer from inbreeding depression when their populations become too small and are isolated from genetically different individuals. Inbreeding depression results in increasingly poorer fitness of offspring and is believed to be more widespread than outbreeding depression.

In general, the symposium focused on use of local ecotypes for restoration of native plants. However, in the case of rare plants whose reproductive problems are caused by inbreeding depression, restorationists may need to look farther for plant material that can enhance genetic diversity. An example of such a species illustrated by Dr. Havens is the Lakeside daisy, *Hymenoxys acaulis* var. *glabra*. Isolated existing populations of the species have little genetic diversity. Studies of the reproductive biology of Lakeside daisy determined that the species is self-incompatible, meaning that self-crosses and crosses between closely related plants do not produce fruit. This biological problem was deemed one of the reasons for the near-extirpation of the species in Illinois. For this reason, restorationists used plant material from Ohio and Michigan in recent re-introductions in Illinois.

Such a course of action would not be advisable in the case of a species that could experience outbreeding depression. Examples of outbreeding depression are less well-documented, but such depression may occur in cases where there is extreme local adaptation so that introduction of plants from distant sources could result in disruption of closely-adapted gene complexes. The distance from which species are naturally pollinated varies between and within taxonomic groups. A specific example is the wider pollination distance of the cardinal flower *Lobelia cardinalis*, which is pollinated by hummingbirds, than of *Lobelia siphilitica*, which is pollinated by bumblebees. Insect-pollinated species have a narrower pollination distance than wind-pollinated species like grasses. Therefore, it would be reasonable to hypothesize that outbreeding depression would be more likely to occur in the case of insect-pollinated species than wind-pollinated species. We can extend this thinking to postulate that, in the absence of specific information about the genetics of a population, it would be less advisable to re-introduce insect-pollinated plants from a distant source than would be the case for wind-pollinated plants.

What are the practicalities of re-introducing rare plants? Dr. Havens reminded listeners that the process of re-introduction involves an unconscious selection of individuals at every stage from seed collection to growth in a greenhouse or nursery. We collect seeds that are ripe the day we visit; those that survive our storage and ex-situ propagation techniques are those best adapted to storage and greenhouse conditions. One of our objectives in this type of work should be to minimize unconscious selection as much as is possible. Restoration of rare plants is intrinsically a labor-intensive and scientifically designed activity. Practical considerations include:

Seed collection

Customary practice among botanical gardens is to collect seed from several populations to assure a range of natural genetic variability, and from multiple plants within a population. Because we are talking here about fragile populations of rare species, a rule of thumb would be never to collect more than 5% of the seed at the site to avoid impact to the population.

The importance of keeping maternal lines separated is becoming increasingly well understood, so several seeds from a single plant should be collected to assure viability and these should be kept in a separate envelope or container instead of being pooled. These guidelines necessitate hand collection.

Seed storage

Seeds that are being stored for long periods of time, as is the case at the national seed storage facility in Fort Collins, are kept in cool, dry, clean conditions, often at -20 degrees Celsius or even in liquid nitrogen. Most Midwestern seeds require both drying and freezing to germinate. Seeds in long-term storage should be tested periodically to assure they are still viable and enhanced with new seedlots from the wild.

If ex-situ populations are being established in the laboratory or greenhouse, it is important to look at the soil conditions of natural populations, to take into account whether the species requires a mychorrhizal inoculant, and to determine whether information is available on the germination requirements of the species. A good, useful reference for this is the book "Seeds" by Carol C. Baskin and Jerry M. Baskin of the University of Kentucky. Ex-situ (laboratory) populations should not be retained for long periods of time through several generations because of the risk that plants will adapt to their greenhouse conditions. As a result of small population sizes, these populations are also more prone than natural populations to genetic drift and the accumulation of mutations.

Site selection

In general, sites should be selected only within the documented natural range of the species and should match the ecological conditions of the nearest known populations, or of the populations from which source material is available. Such a match includes not only geographical proximity, as is often emphasized, but also such factors as soils, climate, and slope exposure. *De novo* introduction should use multiple sources of seed, but re-introductions or augmentations of small populations should use propagules only from that site.

Dr. Havens suggested the following guidelines that can help agencies responsible for issuing permits reach sound biological decisions about the appropriateness of proposed introductions or re-introductions.

When re-introduction may be appropriate

- The species is near extinction;
- There is evidence of population decline;
- Populations are poorly protected;
- It is experiencing dispersal problems;
- There is appropriate source material for re-introduction;
- Propagation is possible;
- The activity supports Recovery Team recommendations.

When re-introduction is not appropriate

- Re-introduction would result directly or indirectly in the loss of plants or populations at a natural site;
- Appropriate source material is not available;
- Other threats to the species are not controlled, so the re-introduced population would be in jeopardy

Genetic guidelines

- Create a genetically diverse population.
- Equalize founder representation.
- Use stock from the same ecoregion or evolutionary lineage if known, except under exceptional circumstances.
- Consider the breeding system of the species—for example, don't plant insect-pollinated species in an area from which the pollinators are absent.
- Design restorations as an experiment with three to five replications.
- Monitor re-introductions or restorations for a period of years appropriate to the life history of the species being introduced. Ideally this means monitoring through the successive two generations (NPS).

Anyone thinking of using state or federally listed species for research, restorations or reintroductions must contact the appropriate agencies for permits. In Minnesota, contact Dr. Bonita Eliason, coordinator; Minnesota Natural Heritage and Nongame Research Program, DNR.

People and Cliffs in Minnesota

Summary of Dec. 2 program
By Virginia Card

Professor Mike Farris, College of Liberal Arts, Biology and Environmental Studies, Hamline University, and his students studied the effects of trampling by humans on the vegetation of cliffs in Minnesota. They are particularly interested in damage caused by rock climbers and sightseers in state parks. Some of the cliffs they studied are Buffalo Ridge, Interstate State Park, and Shovel Point .

Buffalo Ridge, in Blue Mounds State Park in southwestern Minnesota, is beautiful, and a nice place to rock climb, especially in March and April. Interstate State Park, near Taylor's Falls, includes the most heavily used climbing cliffs in Minnesota, and there are also several heavily used cliff faces [redacted] the river in Wisconsin.

Shovel Point, on the North Shore, is less steep and has more trees, such as cedars and birches. The rock faces are less angled and have more features, which leads to a higher abundance of vascular plants. Shovel Point is also the only place in the study where *Umbellaria* and *fruticose* lichens were found.

Handbook is resource for roadside plantings

"Roadside Use of Native Plants," a handbook by the Federal Highway Administration, provides guidance on using native plants for erosion control, landscaping, maintenance of rights-of-way, and helping control introduction of invasive species of plants.

The 665-page book contains state-by-state information and can be ordered from Fred Bank, FHWA, HEPN-30, Room 3240, 400 Seventh St. S.W., Washington, D.C., 20590; or by e-mail to Bonnie Harper-Lore at Bonnie.Harper-Lore@fhwa.dot.gov.

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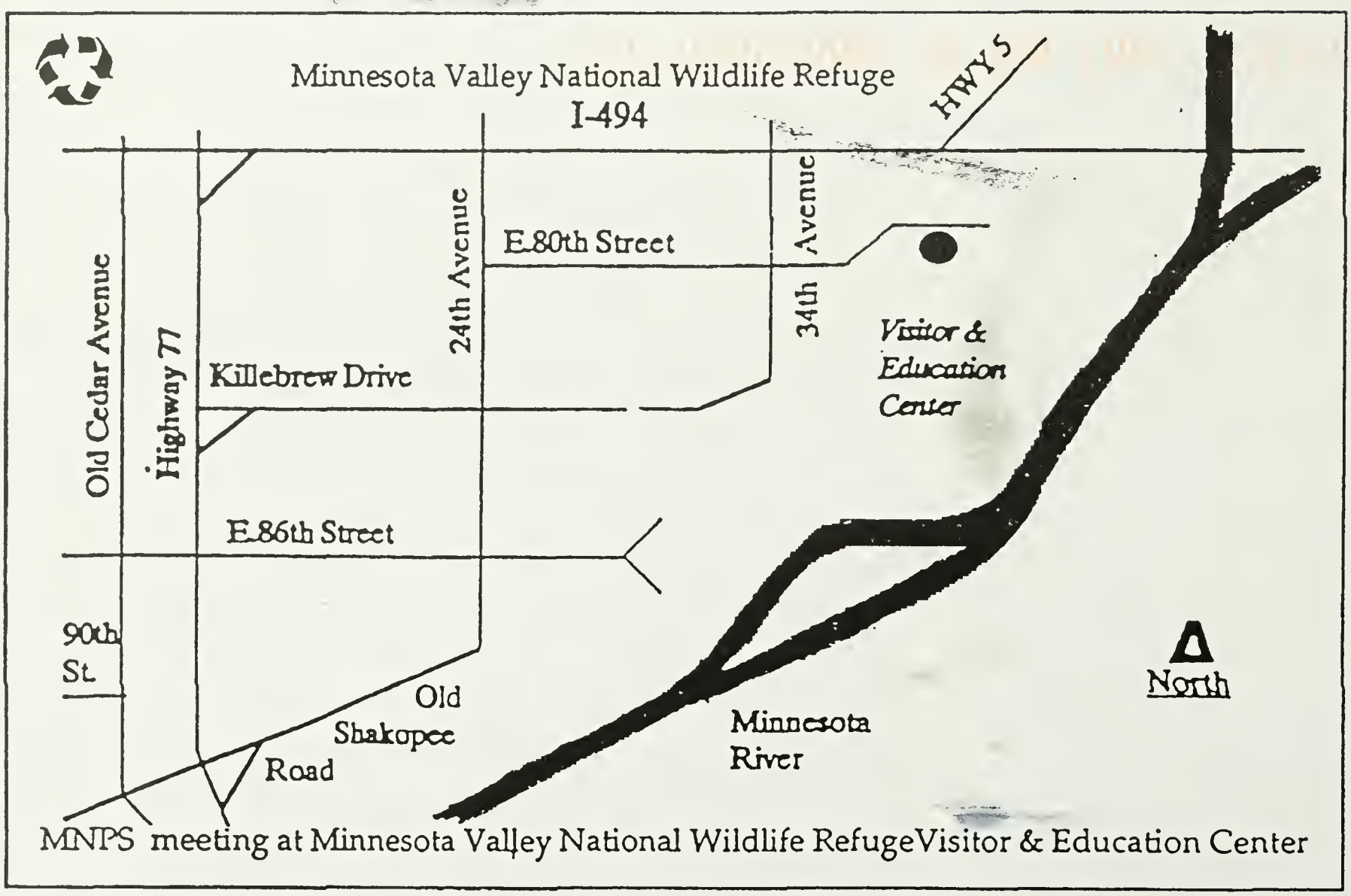

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Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 19 Number 4 **Summer 2000**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600
612-335-2323

6 - 6:30 p.m. — Board meeting, Room B
6:30 - 7 p.m. — Refreshments, information, Room A
7 - 9 p.m. — Program, Society Business
9 - 9:30 p.m. — Socializing
9:30 p.m. — Doors locked

Programs

Oct. 5
Next meeting.

Tour of Iron Horse SNA set for Aug. 20

Joel Dunnette will lead a tour of Iron Horse Scientific and Natural Area Sunday, Aug. 20, in cooperation with Zumbro Valley Audubon Society.

Participants will explore the diversity of this mesic prairie remnant and hope to find hundreds of hungry Monarch butterflies feeding on *Liatris*, rattlesnake master and wild quinine. This 35-acre SNA is between, and protected by, two rail beds— source of the Iron Horse name.

Meet either at 2:30 p.m. at the Salem Town Hall, seven miles southwest of Rochester on Co. Rd. 25; or at 3 p.m. at the north end of the prairie, one mile east of Hwy. 56 on Twp. Rd. N, just south of Hayfield. RSVP to Joel, 507-3365-8091, or to Deb Anderson, 507-867-4692. E-mail Deb at gary-deb@att.net.

MNPS Web Site

http://www.stolaf.edu/depts/biology/mnps

MNPS to offer grants for native plantings

by Deborah Strohmeyer

As was mentioned in the spring newsletter, the Minnesota Native Plant Society is setting up a program to help encourage the awareness and use of native plants. It will provide grants of native plants to homeowners. The program, tentatively called "Think Native," will provide:

- Educational resources;
- Lists of native plant suppliers and landscapers;
- Lists of suggested plant species;
- Native plants.

In 2001 we will begin a pilot program. Volunteer administrators will be the core of the program. Each administrator will submit a proposal that defines his or her project. This proposal will follow MNPS Board guidelines and include such items as a definition of the project, scope and area. This approach is intended to enhance the efficiency of the program by making suitable, local accommodations possible. For instance, an area may be jointly sponsored by another organization.

A designated fund will be created for the Think Native Program. Starting this fall, anyone may donate money to it by stating that their funds are for the program. These funds will be solely for the purchase of native plants. The MNPS will provide basic support and cover administrative expenses. We welcome feedback from any member. Further details may be obtained by contacting Deborah Strohmeyer or David Johnson.

Gardeners, beware of state's endangered species law

by Nancy Sather

As a followup to last spring's symposium, members of the society may now be more aware of the the unanswered biological questions that underly the provisions of the Minnesota state endangered species law.

Please be aware that it is illegal to gather, take, buy or sell plants listed as endangered or threatened in the state of Minnesota. This requirement applies to the sale or purchase of endangered and threatened plants by nurseries located within the state to purchasers planting in the state.

Because some Minnesota wildflower nurseries also serve patrons in other states, they may carry plants on the Minnesota list. It is not

Continued on page 3

Aspects and Opportunities

by Joel Dunnette, MNPS president

I see several different aspects of native plants that Minnesota Native Plant Society should keep in mind. In my opinion, MNPS can support each of these aspects, and can be a significant contributor in several.

• We need to enjoy native plants and share that enjoyment with others. This emotion is needed to drive our support of the other aspects.

• We need research so that we know what native plants and communities are most threatened, and so that we know how native plants work and interact with the world around them. And how to best conserve them.

• We need education so that our members, the general public, public agencies and private companies know why native plants and communities are valuable, and how to conserve and use them.

• We need conservation action so that the knowledge becomes useful. And native plants and communities not only survive, but expand.

Each of us can contribute to one or more of these aspects, in personal and public ways. And each of us should contribute, in the ways that we can. Every positive contribution, no matter how small, counts!

Opportunities are everywhere. They come in all sizes. You can enjoy and help others enjoy native plants by sharing what you know, and by organizing field trips. Everyone of us has knowledge and enthusiasm that others would love to share. You can read up on native plants, talk with more experienced persons, get some experience in your yard or in the many public sites that are looking for observers and volunteers. And when you share that knowledge with friends and neighbors, we all benefit. By planting natives in your yard or helping with neighborhood or public projects you can advance the conservation cause.

There is a rising tide of interest in native plants, and of action to use and conserve natives. It is a wonderful time to be involved. Join in!

If you want suggestions of ways you can participate, whether large or small, please contact me or other board members. I am sure we can find something that will fit you.

Minnesota Native Plant Society's purpose

(Abbreviated from the Bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

The Minnesota Native Plant Society

Minnesota Plant Press

Gerry Drewry, editor

24090 Northfield Blvd., Hampton, MN 55031; 651-463-8006 (phone, fax)

E-mail: gdrewry@pioneerplanet.infi.net

The Minnesota Native Plant Society is a tax-exempt 501 (c)(3) organization as determined by the U.S. Internal Revenue Service. Contact the society by e-mail at: mnps@altavista.net. Dues for regular members are $12 per year; for students and seniors, $8; for families, $15; for institutions, $20; and for donors, $25. All dues include a newsletter subscription. Four issues are published each year. Make checks out to: Minnesota Native Plant Society; mail them to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108.

MNPS Board of Directors

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Ethan Perry, 1766 Malvern St., Lauderdale, MN 55113; 651-603-7176 (H); eperry@greatrivergreening.org

Nancy Sather, 612-721-4803; nps@wavetech.net; nancy.sather@dnr.state.mn.us

Gerry Drewry, ex-officio; address above.

Plant laws

Continued from page 1

technically illegal for them to sell plants that are progeny of non-Minnesota stock to people outside the state of Minnesota.

If a Minnesota customer, whether an individual or a unit of government, purchases plants on the Minnesota list, that purchase is in violation of the Minnesota endangered species law. It is not enough to assume that if a plant on the Minnesota endangered and threatened list is in a nursery catalog it is OK to purchase it. Please beware of making such illegal purchases by cross-checking the catalogs of Minnesota nurseries with a copy of the state endangered species list.

You can get a copy of the list by contacting the Department of Natural Resources, Division of Ecological Services, DNR Box 25, 500 Lafayette Road, St. Paul, MN 55155. At the same time you might want to inquire about a newly-released handbook on prairie restoration prepared by the Scientific and Natural Areas Program.

Linda Huhn joins MNPS board

New board member Linda Huhn is an avid gardener and uses as many native plants as possible. She likes to photograph butterflies, which led her to adding *Echinacea, Liatris,* goldenrod and Culver's root to her garden.

Linda joined The Nature Conservancy in the early '80s. "Going on TNC field trips introduced me to beautiful areas of Minnesota, and I became very interested in learning all the native plants in our state," she said.

She joined the MNPS in 1989 and served as secretary from the spring of 1994 through the summer of 1995. "I have always enjoyed my membership. MNPS people are my kind of people. I have learned so much about plants and Minnesota ecosystems and look forward to continuing my education in that respect, and especially to the experience of serving on the board."

Linda is a freelance event photographer and sells some nature photographs. She is a native of New Ulm, has degrees in English and journalism, and lives in Minneapolis.

Joel Dunnette is new president of the MNPS

The Minnesota Native Plant Society Board of Directors held its quarterly meeting June 3 at Gerry Drewry's home. The board members elected Joel Dunnette president and Deb Strohmeyer secretary. David Johnson will continue to serve as treasurer. The vice-president position is still open.

Three members retired from the board. They are Catherine Reed, David Johnson and Roy Robison.

Cynthia Lane resigned. She is now working in Coral Gables, Fla., at Fairchild Tropical Garden's research center as a plant conservation ecologist.

New (first-year) board members are Meredith Cornett, Ethan Perry and Esther McLaughlin. Second-year members are Harriet Mason, Nancy Sather and Deb Strohmeyer. Third-year members are Virginia Card, Joel Dunnette and Linda Huhn, who was appointed to serve the last year of Cynthia Lane's term.

Most of the committee positions for 2000 - 2001 were filled, but several volunteers are needed. The committee chairs are as follows.

Program and Lecture Committee: monthly program, Virginia Card; seed exchange, Dave Crawford; plant sale, Dave Crawford and Gerry Drewry; audiovisual, Dave Crawford and Joel Dunnette; refreshments and clean-up, Meredith Cornett and rotating board members.

Education and Outreach Committee: Harriet Mason, chair; web page and listserv manager, Charles Umbanhowar; technical inquiries and display board, Deborah Strohmeyer.

Membership Committee: David Johnson and Diane Hilscher, chairs; roster and mailing labels, David Johnson; new member inquiries and packets, Diane Hilscher; membership table, Ruth Phipps and David Johnson.

Publications Committee: newsletter editor, Gerry Drewry; brochure and stationery, Roy Robison; wildflower guide, open; newsletter mailing, Chuck and Ellen Peck.

Conservation Committee: Ethan Perry.

Symposium, open.

Field Trips, Deb Anderson.

Name Tags, Ruth Phipps

Mail Pickup and Distribution, Ethan Perry.

Historian, open.

Postcards, open.

Keeper of the Key, Dave Crawford.

Landscaping assistance project

The board discussed the new landscaping assistance program, which is to start in 2001. They approved $500 for administration of the program. Fundraising for money to purchase plants will start this fall. Deborah Strohmeyer is chair of the project. She is assisted by Dave Crawford, who will administer the program in the White Bear Lake area, and Shelley Shreffler, of the St. Paul Neighborhood Energy Consortium. Details of the program are still being worked out. Deb will talk about it at the October meeting.

Treasurer David Johnson reported that the symposium was attended by 210 people and had a net profit of $838.88, not counting new memberships or sales of the wildflower guide.

Research is providing 'how-to' clues about white pine regeneration

by Mary Hoff
(Written for the Minnesota Department of Natural Resources, Division of Forestry Publication, "Roots," May, 2000. Reprinted with permission.)

What mix of environmental conditions best favors white pine regeneration after forest disturbance? If there is such a thing as a secret formula for giving white pine the best possible chance of regenerating in the wake of fire or logging, Scott Weyenberg knows right where it is: Buried deep within the volumes of data he collected over four months last summer in northeastern Minnesota.

Scott, a graduate student working with Lee Frelich and Peter Reich in the University of Minnesota's College of Natural Resources, is the proud owner of one of the world's largest collections of information on site conditions associated with white pine seedlings and saplings growing on formerly logged or burned forest sites. His hope is that the information will yield valuable insights that can be used to guide forest managers as they work to restore white pine populations under various conditions in the northern part of the state.

"These data could help managers tailor practices to specific sites," he says. "This information may be beneficial in determining the usefulness of management practices such as prescribed burning or silvicultural systems."

Research plots

To try to get a handle on what conditions are most favorable for growing new white pine, Weyenberg established 2,000 research plots along transects extending out from stands of white pine on 30 burned sites and 30 logged sites on the Superior National Forest. Over more than a hundred days in the woods (during which time, he notes, it rained a total of 25 inches) he recorded the numbers of white pine seedlings and saplings on each plot, as well as detailed information about the conditions under which they were growing: type of disturbance, type of substrate, slope, aspect, position, ground cover, shrub cover, sapling competition, soil characteristics, site physiography, and total basal area of seed trees.

Collecting the data

Scott believes that buried in the mass of information he has collected are powerful clues to what kinds of conditions are most conducive to white pine regeneration. As he wades his way through the data in the months to come, he hopes to unearth young white pines' "secrets to success" and translate them into concrete recommendations for managing disturbed forests in a way that maximizes their potential to produce tomorrow's tall pines.

Until last month, the toughest challenge Weyenberg had encountered in his research probably was trying to calculate basal area and volume of a stand full of mature white pines that had been transformed into a jumble of downed trees by last summer's July 4 blowdown. Now, however, the task has turned to something he considers even more grueling: sitting at a desk conducting detailed statistical analyses of all of the data he has collected. "I like the field component," he says. "What I don't like is this part. It's a lot more taxing than hiking three miles through the woods in the rain."

Trends

Though Scott is only beginning to get a good look at the data, he already is seeing some interesting trends. Preliminary results ("the key word here is 'preliminary,'" he says) suggest that seedlings tend to be more abundant on burned plots than on logged plots. However, the same pattern does not seem to hold true for saplings. On young sites, saplings seemed more prevalent on logged plots than on burned ones — a finding he suspects has to do with the existence of advance regeneration, which tends to be left behind after logging but destroyed by fire. Interestingly, however, he sees no significant difference between sapling populations on burned and logged plots when he looks at older sites, — a result he attributes to the higher prevalence of competing vegetation after logging than after fire.

Years to come

What remains buried in the data is what Scott believes will be some valuable information about the relationship between specific growing conditions and regeneration success. On some of the experimental plots, the number of seedlings did not fall off exponentially with distance from seed source, as is the general rule for tree regeneration. Why not? Scott suspects it has to do with some of the environmental characteristics he measured, such as substrate or soil type. His next goal is to find out just what those influential characteristics are and derive from them specific recommendations for management of white pine regeneration — for example, the proper number of seed trees to leave, the value of using herbicide to decrease competition, and the types of substrate that promote effective white pine regeneration.

Ramsey County planting natives in its parks

Prairie restoration specialists are planting 74 acres of parkland in Ramsey County this year. The long-term goal of the parks department is to grow prairie plants on 10 percent of the park system's 6,000 acres. Native species now grow on 2 percent of the parkland.

Hop hornbeam

by Charles Umbanhowar

Ostrya virginiana is a small tree, a member of the birch family, and it is common to many of the forests of Minnesota. It is most often called hop hornbeam, but goes by a variety of other common names including leverwood, deerwood, and ironwood. Ironwood is an especially confusing common name because it is also applied to *Carpinus caroliniana*, which is also a member of the birch family.

Hop hornbeam is distributed throughout much of northeastern North America, extending west to Minnesota. It grows in dry oak forests as well as more moist forests like the Big Woods that are now dominated by sugar maple and basswood. Hop hornbeam grows to a height of 20 - 30 feet and rarely makes it into the canopy. It can also be found growing in oak savannas, and it is possible to see dense stands of hop hornbeam growing as the canopy dominant on what are apparently abandoned pastures. It is highly shade tolerant and grows slowly, even under conditions of high light.

In addition to its short stature, hop hornbeam can be recognized based on (a) multiple trunks, (b) a thin, brown, scaly or shaggy bark that flakes easily when rubbed, (c) horizontal branches that end in fine twigs and alternate leaves and buds.

The leaves are thin and held horizontally They are sharply pointed, have several prominent veins, and are finely toothed. Male and female flowers are born in separate catkins (pendulous clusters of flowers), and the female catkins have an inflated bract (i.e. modified leaf) that encloses the fruits.

The female catkins resemble the flowering clusters of hops used to bitter beer — hence the "hop" of hop hornbeam,. But there is no relationship between hops and hop hornbeam other than the name; beer made with the female catkins is likely to have a very nasty flavor.

The word hornbeam comes from the old English and refers to the very dense nature of the wood and its use in construction or as posts. The finer twigs of hop hornbeam were used to make baskets, and the inner bark was boiled and used to cure fever and a range of other conditions.

(This is an abstract of a Plant-of-the-Month Talk.)

Is buckthorn reducing numbers of songbirds?

The proliferation of exotic shrubs such as buckthorn and honeysuckle may be contributing to the declining populations of some songbirds.

For six years, Christopher Whelan, avian ecologist at the Illinois Natural History Survey, and Kenneth Schmidt, a researcher at the University of Memphis, collected data on 585 American robin and wood thrush nests in the Morton Arboretum near Chicago. They discovered that birds that nested in exotic honeysuckle and buckthorn were almost never successful. Their nests were destroyed or raided by predators before the young birds had fledged.

Whelan and Schmidt attributed these failures to the exotic shrubs. Honeysuckle has replaced most of the native arrowwood, and buckthorn has crowded out the hawthorn. Honeysuckles have strong branches that encourage birds to build nests lower than normal, within easy reach of raccoons and other marauders. The branches are strong enough to support the weight of the predators. Buckthorn does not have the protective thorns found on hawthorns, the researchers said.

When the birds had a choice between native and exotic shrubs, they often chose to build their nests in the exotic shrubs, which leaf out earlier. In the six years of the study, the number of robins nesting in honeysuckle increased from 5 percent to more than 30 percent. Wood thrushes chose exotic shrubs about half of the time. Almost all of these nests failed. When a robin's nest in an exotic shrub was destroyed, the robin usually built its next nest in a native tree. But a wood thrush whose nest was destroyed would continue to build nests in the exotic shrubs.

Is this a problem in other parts of the country? "If exotics have invaded to the same extent throughout their whole geographical range as they have in Chicago and the Midwest, and if birds are using them the way they're using them around here, my guess is it's a big problem," Whelan said.

The study was published in the December issue of Conservation Biology. Wesley Hochachka, assistant director of bird population studies at the Cornell Laboratory of Ornithology, was skeptical, but said that the idea merits further study, according to the Associated Press report.

Scott Robinson, head of the Unitversity of Illinois Department of Ecology, Ethnology and Evolution, said that the study may boost efforts to restore native plants. "Some people always assumed that if birds were nesting in a habitat, it must be good habitat," he said. "But some habitats are inappropriate."

(Information is from an Associated Press report Jan. 20, 2000.)

Wildflower guide sale

The "Guide to Spring Wildflowers in the Twin Cities Area" booklet is on sale to members and businesses who will resell it for $3 a copy, if they purchase a minimum of 10 copies. The regular price is $5 each. For more information, contact MNPS Treasurer David Johnson at 651-772-3799, or david.johnson@usfamily.net.

Debunking common tree myths

by Kent Honl,

Tree myths are widespread and have caused irreparable damage to many trees. Each myth has its own implications for the well-being of trees. An understanding of tree biology helps to debunk the myths.

Four of the most common myths are:

- Trees are big and tough;
- Depth of root growth equals height of crown;
- Trees should be thinned to prevent storm damage; and
- Tree wounds need to be treated with paints or sealers.

Myth 1
Trees are big and tough; nothing can injure them.

Trees are massive creatures that appear more or less static and unchanging. In fact, they are easily destroyed by carelessness and are mutilated by well-intentioned people. Trees often die slowly — we don't see the effect right away.

Fact: Trees are energy-capturing systems.

Leaves collect energy from the sun. The tree stores sugars in its woody tissue — its branches, trunk and roots. The roots hold up the tree, collect water and minerals, and store energy. There is a finely tuned balance between the leaves and roots.

Tree activity varies according to the season. During winter dormancy, energy storage is high. Spring leaf expansion is the season with the lowest stored energy. Summer is energy storage time. In the fall, roots grow and the tree prepares for dormancy.

When the system works properly, the tree collects more energy than it uses to survive — to grow, defend itself, set seed, etc. There are many ways to disrupt this system, as we see as we look at the next myths.

Myth 2.
Depth of root growth equals the height of the tree's crown.

Very few species of trees have deep taproot systems. Most trees have almost all roots within three feet of the soil surface. Many have roots just below (12 inches) the surface of the soil.

Fact: Roots grow in air spaces between soil particles and need oxygen to survive.

Roots live in association with other organisms — mycorrhizae. It is very easy to compact soil and destroy roots. Problems are associated with planting depth and methods. Effects of grade change may take years to show up. Prevention is the best approach with construction damage. It is better to remove a tree in the beginning than to try to save it when it has been irreparably damaged. Fertilization and regeneration help salvageable trees. Root problems can show up as crown dieback, because the system has been disrupted.

Myth 3
Trees should be pruned to prevent storm damage.

Tree branches do not break because they form a "sail" in high winds. Leaves can fold and curl out of the way; branches flex and accommodate. Branches break because of weak attachment, decay and poor tree health.

Fact: Pruning harms trees

Pruning removes wood needed to capture and store energy in leaves and wood. Thinning forces regrowth of weakly attached branches that will become more hazardous than before. Thinning to let more light through to the grass will do the same thing — cause tree stress. Proper pruning dosage is limited to deadwood, stubs, weakly attached branches, and correction of structural problems.

Myth 4
Tree wounds need paints or sealers to aid 'healing.'

This actually contains two myths.

1. Trees "heal" their wounds the way we do: and
2. Trees need help from people to do this.

Fact: Trees seal wounds (build walls around them).

Healing means to replace damaged tissue with new tissue. Trees seal their wounds by building walls around them and adding new tissue over them. Trees prevent the advance of decay with internal barriers. Contact of oxygen on the wound is necessary to start this process; paints prevent this from happening.

The branch collar is a built-in protection zone within tree branches. Improper pruning cuts remove the branch collar and allow decay to advance in the tree. It is best to use the natural defenses of the tree and get out of the way.

(This is a summary of a talk by Kent Honl, Rainbow Treecare Arborist)

Nitrogen overuse reduces diversity

As nitrogen fertilizer is applied over a period of time, progressively fewer species of plants survive. The rate of this decline levels off at 40 to 70 percent. Surviving species are most often the less desirable, non-native ones, such as quack grass.

These are some of the conclusions that University of Minnesota Ecologist David Tilman has reached after analyzing plants in 207 research plots for almost 20 years. Tilman announced his conclusions Feb. 20 at the annual meeting of the American Association for the Advancement of Science in Washington, D.C.

To get world food production to double over the past 35 years, farmers have had to use seven times as much nitrogen as they used to, effectively doubling the amount that already comes in from the atmosphere, Tilman said. He expects three to four times more nitrogen to be used by 2050 than is used today. Solutions include more efficient use of nitrogen, such as timing fertilizer applications, and removing more of it from sewage.

The story of Seminary Fen

by Fred Harris,

"Seminary Fen" consists of a complex of wetlands on deep peat deposits within the valley of the Glacial River Warren in the eastern end of Carver County. Its name comes from its close proximity to the former site of the Assumption Seminary. It contains an outstanding example of a calcareous fen, which is Minnesota's rarest wetland type.

Calcareous seepage fens may be defined as peat-accumulating wetlands formed in areas of upwelling, mineral-rich (mainly calcium and magnesium bicarbonates) groundwater. They form on shallow slopes where groundwater emerges from permeable, calcareous material such as coarse, calcareous glacial drift. Peat accumulation occurs as a result of slow decomposition rates from low temperatures and anaerobic conditions.

As upwelling groundwater reaches the surface of the wetland, its hydrostatic pressure is released, causing the outgassing of dissolved carbon dioxide and the precipitation of carbonate minerals. As a result, calcareous fens contain relatively high mineral concentrations (above 30 mg/l. calcium) and high pH (ranging from 6.8 to 8.5). Seminary Fen occurs on top of a sandy/gravelly outwash terrace. Groundwater feeding the fen flows through the bluffs forming the north side of the valley. These bluffs consist of calcareous glacial tilll.

Based on well studies at Savage Fen a few miles downstream, the major aquifers supporting the fen are probably in the bedrock underlying the till, principally the Prairie du Chien (dolomite) and Jordan Sandstone formations.

Today, Seminary Fen consists of a mosaic of wetland types with several areas of calcareous seepage fens corresponding to points of greatest groundwater upwelling. The other wetland communities include shrub swamp, wet meadow, emergent marsh, and cattail marsh.

Assumption Creek, a natural trout stream, flows along the edge of the main body of the wetland. The building site is on top of a ridge of gravelly outwash at the south edge of the outwash terrace. Below the terrace to the south are more wetlands and small areas of fen.

The calcareous fens in the site occur on shallow mounds of peat and are dominated by short-statured graminoids, such as sterile sedge *(Carex sterilis)*, prairie sedge *(Carex prairea)*, three square *(Scirpus pungens)*, and marsh muhly *(Muhlenbergia glomerata)*. Peat deposits are greater than 12 feet deep, indicating that the deepest peat layers in the fen are 8000+ years old and started forming soon after the glacial river subsided. The fen contains a rich diversity of very rare plant species, several of which are found in Minnesota only in fens.

These plants include the small white lady's slipper *(Cypripedium candidum)*, sterile sedge (*Carex sterilis*), beaked spike-rush *(Eleocharis rostellata)*, twig-rush *(Cladium mariscoides)*, edible valerian (*Valeriana edulis* ssp *ciliata*), whorled nut-rush *(Scleria verticillata)*, and hair-like beak-rush (*Rhynchospora capillacea*). The *Cladium, Eleocharis*, and *Scleria* are species of Atlantic coastal salt marshes; the latter two are disjunct in Minnesota. *Eleocharis rostellata* was first discovered in the state in 1980. Other characteristic plants in the fens include *Gentianopsis procera, Parnassia glauca, Salix candida*, and *Lobelia kalmii*.

By law, calcareous fens "may not be drained, or otherwise altered or degraded." Calcareous fens are the only native plant communities to have such a high level of protection in the state. In spite of this, it will be difficult to protect Seminary Fen in the rapidly developing cities of Chaska and Chanhassen. The most critical factor will be to maintain the aquifers that supply groundwater to the fen. The DNR is currently negotiating to purchase a major portion of the site.

(This is an abstract of a talk by Fred Harris, plant ecologist, DNR.)

Plant Lore

by Thor Kommedahl

What is a yew?

The American yew, sometimes called ground hemlock, is *Taxus canadensis*, a low evergreen shrub sometimes classified with conifers.

Is it a conifer?

No, you can tell a yew from other flat-needled evergreens by its lack of cones and its cuplike red fruits each containing a single seed; fruits look like berries, each called an aril.

Where do yews grow?

Yews grow in woodlands and forests of northern and southeastern Minnesota, as well as in other northern states and Canada.

How did it get its name?

Taxus is Latin for yew which means bow, as it once was the traditional wood for archers' bows.

What is yew used for?

It is a popular ornamental foundation planting on north sides of houses and buildings. But other species are used also such *T. cuspidata* and *T. baccata.*

Does it have medicinal uses?

Yes, American Indians used minute amounts of leaf tea for a variety of ailments. *Taxol*, isolated from *T. brevicola*, a western species, is used to treat breast and ovarian cancer.

What about poisons?

The alkaloid *taxine* is present in yews and is poisonous to humans and livestock. Ingesting as few as 50 needles has been fatal. The red fruit is non-toxic, but the seed within is very poisonous. Two orangutans in Como Zoo died recently (7-2-00) from ingesting pruned yew branches. The toxin causes cardiac and respiratory failure. In days of yore, yew sap was used by the Celts to produce poisonous arrows.

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